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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROLAND ALBERT, ANDREAS REKOFISKY, CHRISTIAN
FRITZSCHE, and ULF SCHEUERER

Appeal 2009-001486
Application 10/616,018
Technology Center 3600

Decided: August 4, 2009

Before: JENNIFER D. BAHR, LINDA E. HORNER, and STEVEN D.A.
McCARTHY, *Administrative Patent Judges.*

BAHR, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Roland Albert et al. (Appellants) appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-5, 7-12, 14-16, and 18-22. Claims 6, 13, and 17 have been canceled. We have jurisdiction over this appeal under 35 U.S.C. § 6 (2002).

The Invention

Appellants' claimed invention is directed to a control plate that allows for adequate heat dissipation from heat-generating components. Specification 3:4-7. Plastic control plate 1 has at least one channel 2 running through the plate for carrying a cooling medium. Specification 6:12, 22-23, fig. 1. Heat conduction body 3 is integrated into the plastic control plate 1 such that the top surface of conduction body 3 is flush with the top surface of plastic control plate 1. Specification 6:23-25, fig. 1. Further, heat conduction body 3 is adjacent to channel 2 and in part forms channel 2. Specification 20:22, fig. 1.

Claim 1, reproduced below, is illustrative of the claimed invention.

1. A plastic control plate for a hydraulic gearbox control device in a motor vehicle, said plate comprising
 - a single piece body having an opening with a bottom wall having at least a partially flat area;
 - at least one channel running through the plastic control plate for carrying a cooling medium, and
 - a heat conduction metal body plate having a top surface and a bottom surface, said plate at least partially integrated in the plastic control plate arranged directly adjacent to the channel, wherein said heat conduction metal body plate top surface is flush with a top surface of the plastic plate and wherein said bottom surface rests at

least partially on said bottom wall of said opening and wherein said at least one channel is formed by said heat conduction metal body plate and said integral body^[1].

The Rejections

The Examiner relies upon the following as evidence of unpatentability:

Chia	US 4,868,349	Sep. 19, 1989
Lindberg et al.	US 5,504,378	Apr. 2, 1996
Mertol	US 5,940,271	Aug. 17, 1999
Bäumel et al.	US 5,966,291	Oct. 12, 1999
Loibl et al.	US 6,160,708	Dec. 12, 2000

Appellants seek review of the Examiner's rejections under 35 U.S.C. § 103(a) of claims 1-5 as unpatentable over Chia in view of Lindberg; claims 1-5, 7-12, 14-16, and 18-22 as unpatentable over Loibl in view of Lindberg²; and claims 1-5, 7-12, 14-16, and 18-22 as unpatentable over Mertol in view of Lindberg, Chia, Loibl and Bäumel.

SUMMARY OF DECISION

We AFFIRM.

¹ We note that the "integral body" element lacks strict antecedent basis in the claim. However, from context, we consider the integral body to be referring to the "single piece body."

² The Appellants' "Grounds of Rejection to be Reviewed" maintains this rejection includes Chia (App. Br. 5), as does the Final Rejection mailed June 1, 2006 (Fin. Rej. 3). However, as the Examiner points out (Ans. 8), the inclusion of Chia is a typographical error because Chia is not used in this rejection (*see* Fin. Rej. 3-4, Ans. 4-5).

ISSUES

In rejecting claims 1-5 as unpatentable over Chia and Lindberg, the Examiner reasoned that it would have been obvious to modify Chia's power package by using a heat sink device, as taught by Lindberg, comprising a plurality of coolant channels, in order to increase heat transfer from, thus reducing the overheating of, the power package. Ans. 4.

Appellants argue that the subject matter of claims 1-5 is not obvious in view of Chia and Lindberg. Appellants argue that Chia is not analogous prior art (App. Br. 6-7), that Lindberg does not teach or suggest that the control plate is plastic (App. Br. 7), and that combination of Chia and Lindberg would render Chia unsatisfactory for its intended purpose, because Chia does not allow for channels being formed between the metal plate and the body (App. Br. 8-9).

In rejecting claims 1-5, 7-12, 14-16, and 18-22 as unpatentable over Loibl and Lindberg, the Examiner reasoned that it would have been obvious to modify the heat transfer technique used in Loibl's control unit by using a heat sink device, as taught by Lindberg, comprising a plurality of coolant channels, in order to increase the heat transfer from, thus reducing the overheating of, the unit. Ans. 5.

Appellants argue that the subject matter of claims 1-5, 7-12, 14-16, and 18-22 is not obvious in view of Loibl and Lindberg. Appellants argue that Loibl is not analogous prior art (App. Br. 9), that Lindberg teaches away from the combination of Loibl and Lindberg proposed by the Examiner (App. Br. 11), and that the modified Loibl device would not meet all of the claim limitations, in particular the limitations of "a single piece body having an opening with a bottom wall having at least a partially flat area" and a heat

conduction metal body plate surface being flush with a top surface of the plastic plate, wherein the bottom surface rests at least partially on said bottom wall of said opening (App. Br. 10-11).

In rejecting claims 1-5, 7-12, 14-16, and 18-22 as unpatentable over Mertol, Lindberg, Chia, Loibl, and Bäuml, the Examiner reasoned that it would have been obvious to modify the heat sink used in Mertol's control unit by adding a plurality of coolant channels, as taught by Lindberg, in order to increase the heat transfer from, thus reducing the overheating of, the unit. Ans. 6. Furthermore, the Examiner reasoned that it would have been obvious to modify the heat sink used in Mertol's control unit to be flush with the plastic control plate carrying the heat sink, as taught in Chia, Loibl, and Bäuml, in order to reduce the size and weight of the device. Ans. 5-6.

Appellants argue that the subject matter of claims 1-5, 7-12, 14-16, and 18-22 is not obvious in view of Mertol, Lindberg, Chia, Loibl, and Bäuml. Appellants argue that Mertol is not analogous prior art (App. Br. 11-12), that modification of Mertol to flow cooling fluid through a channel located between the substrate 2 and heat sink 8 would render Mertol's printed circuit board inoperable (App. Br. 13), and that the modified Mertol device would not meet all of the limitations of claim 1 (App. Br. 12). Specifically, Appellants argue stiffener 11 is not a body having an opening with a bottom wall (App. Br. 14).

Appellants' arguments are only directed to claim 1 (App. Br. 7, *see* App. Br. 10, 14, noting the claim language argued - e.g. "flush" - is only found in claim 1); Appellants do not separately argue claims 2-5, 7-12, 14-16, or 18-22. Accordingly, we select claim 1 as the representative claim in

reviewing each of the rejections, with the remaining claims standing or falling with claim 1.

The issues presented in this appeal are as follows:

- (1) Are Chia, Loibl, and Mertol analogous art to Appellants' invention?
- (2) Have Appellants demonstrated that the combination of Chia and Lindberg proposed by the Examiner would either render Chia unsatisfactory for its intended purpose or result in a device not meeting all limitations of claim 1? This issue turns primarily on whether either claim 1 or the proposed combination would require formation of channels between the metal plate and the body.
- (3) Have Appellants demonstrated either that Lindberg teaches away from the combination of Loibl and Lindberg proposed by the Examiner or that the proposed combination would not meet all limitations of claim 1?
- (4) Have Appellants demonstrated either that the Examiner's proposed combination of Mertol, Lindberg, Chia, Loibl, and Bäümel would render the printed circuit board of Mertol inoperable or that Mertol, Lindberg, Chia, Loibl, and Bäümel, even if combined, would not render obvious a plastic body having an opening with a bottom wall with a partially flat area? This issue turns primarily on whether Mertol describes a heat sink that sits atop a bottom wall of a plastic body.

FACTS PERTINENT TO THE ISSUES
(FINDINGS-OF-FACT (FF))

- FF1 Chia describes a device that provides for efficient heat removal of a printed wiring substrate in a plastic-molded package of electronic components. Col. 1, ll. 44-50.
- FF2 Appellant's invention addresses the problem of maintaining adequate heat dissipation of electric components, particularly in a gearbox control device. Specification 4:18-20, 5:11-16.
- FF3 Loibl describes a control unit in a hydraulic control plate of an automatic transmission of a motor vehicle. Col. 3, ll. 30-42.
- FF4 Mertol describes a device that makes it easy to attach a heat sink to any existing or contemplated electronic system to improve the system's cooling, without risking damage to the underlying components. Col. 3, ll. 1-11, 33-39.
- FF5 The Examiner found that Chia describes a plastic control device with a single piece body 31 having an opening with a bottom wall having at least a partially flat area that holds the top of heat conduction metal body plate 19 flush with the top surface of body 31. Ans. 3, *see also* col. 2, ll. 28-31, fig. 5.
- FF6 The Examiner found that Chia fails to describe a channel. Ans. 4.
- FF7 The Examiner found that Lindberg describes a heat sink device containing a channel. Ans. 4. The heat sink is made of two portions 132 and 134 that define the channel for a cooling fluid to flow through. Col. 5, ll. 56-62. The heat sink may be made of a suitable thermally-conductive metal, such as aluminum or copper. *Id.* Fins

146 can be employed to create multiple channels within the heat sink.
Col. 6, ll. 7-12.

FF8 The Examiner found that Loibl describes a single piece plastic control plate body 11 that holds base plate 10 inside its circumference such that base plate 10 rests on top of latching hooks 15 of body 11, and the top surface of plate 10 is flush with the top surface of body 11. Ans. 4-5, *see also* col. 3, ll. 55-65, figs. 2, 3. Base plate 10 acts as a heat sink and is preferably made of aluminum. Ans. 4, *see also* col. 3, ll. 43-54.

FF9 The Examiner found that Loibl describes a single piece plastic control plate body 11 having a bottom wall having at least a partially flat area, and a heat conduction aluminum body plate 10 being flush with the control plate, but fails to describe a channel. Ans. 4-5. Appellants do not contest these findings.

FF10 Mertol describes a heat sink attachment for an electronic semiconductor. Abstract. Heat sink 8 is partially integrated in an opening in plastic stiffener 11; the bottom surface of sink 8 rests on a bottom wall of stiffener 11. Col. 8, ll. 33-35, fig. 13.

FF11 The Examiner found that Mertol fails to describe that the top surface of the heat conduction body (heat sink 8) is flush with the top surface of the plastic plate (stiffener 11). Ans. 6.

FF12 The Examiner found that Mertol fails to describe a channel in the heat sink. Ans. 6.

FF13 The Examiner found that Bäümel describes a heat conducting plate 21 having a top surface flush with plastic control plate 22 (*see* Ans. 6, "Baümel [sic]... show[s] the heat conducting plates [] 21, ... having a

top surface that is flushed with the plastic control plates [] 22...").
Appellants do not contest these findings.

PRINCIPLES OF LAW

In obviousness determinations, all of the features of the secondary reference need not be bodily incorporated into the primary reference. *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981). Moreover, the artisan is not compelled to blindly follow the teaching of one prior art reference over the other without the exercise of independent judgment. *See Lear Siegler, Inc. v. Aeroquip Corp.*, 733 F.2d 881, 889 (Fed. Cir. 1984).

A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. In other words, 'familiar items may have obvious uses beyond their primary purposes.'

In re ICON Health and Fitness, Inc., 496 F.3d 1374, 1379-80 (Fed. Cir. 2007) (citations omitted). Furthermore, in making a determination with regard to obviousness, the inquiry is not limited to looking only at the problem Appellant was trying to solve. The question is not whether the combination was obvious to Appellant but whether it was obvious to a person of ordinary skill in the art. Thus, "[u]nder the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *KSR Int'l. Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007).

ANALYSIS

Issue (1) - Are Chia, Loibl, and/or Mertol analogous art?

The present invention deals with a device that allows for adequate heat dissipation for electronic control components. Specification 3:4-7. The specific component is a gearbox control device in a motor vehicle gearbox housing. Specification 6:7-11. Chia deals with heat removal from electronic components (FF1), which is a problem Appellants faced in designing their plastic control plate (FF2). Loibl's device is a control unit in a motor vehicle transmission (gearbox) (FF3), which is the same field of endeavor as Appellants' device, and, further, addresses heat dissipation (FF8 and FF9), which is a problem addressed by Appellants in designing their plastic control plate (FF2). Mertol's device aids in solving the problem of heat dissipation of electronic components (FF4), which is a problem addressed by Appellants in designing their plastic control plate (FF2). Thus, all three references are analogous prior art.

Issue (2) - Claims 1-5 in view of Chia and Lindberg

The Examiner found that Chia describes each element of claim 1 (FF5), except for the channel (FF6). Ans. 3-4. The Examiner found that Lindberg describes a cooling channel through a heat sink (FF7) and that the addition of Lindberg's cooling channel to Chia's control device would lead to an increase in heat transfer from, and a reduction in overheating to, Chia's control device. Ans. 4.

Appellants first argue that Lindberg does not teach or suggest a plastic control plate. App. Br. 7. However, the Examiner does not rely on Lindberg

to describe a plastic control plate. *See* Ans. 3. Lindberg was used to describe a channel (Ans. 4), not a plastic plate. Appellants' argument is directed to Lindberg in isolation, rather than in combination with Chia, and thus is not persuasive. Nonobviousness cannot be established by attacking the references individually when the rejection is predicated upon a combination of prior art disclosures. *See In re Merck & Co. Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

Appellants next argue that Chia does not allow for any channels being formed between the metal plate and the body because of the location of IC chip 20. App. Br. 8. However, it is well established that limitations not appearing in the claims cannot be relied upon for patentability. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982). According to claim 1, the channel must (1) run through the plastic plate and (2) be formed by the metal body and the plastic plate. There is no requirement that the channel runs *between* the two materials or that at each point the channel is formed by both plastic and metal. Instead, as claimed, the channel could begin in the plastic body, continue inside of the metal body, and then exit out the other end of the plastic body, predictably utilizing the cooling channels as described by Lindberg. The modification of Chia proposed by the Examiner entails replacing the heat sink (heat conduction metal body 19) with a heat sink, as taught by Lindberg, having coolant passages running therethrough. Given the placement of the heat sink within the plastic body 31, as illustrated in Figure 5 of Chia, coolant would have to enter the passages in the heat sink via passages formed in the plastic body. Accordingly, the passages in the plastic body and through the heat sink would constitute at least one channel formed by the heat conduction metal body plate (heat sink) and the plastic

body, as called for in claim 1. As such, Appellants' argument is not persuasive.

Finally, Appellants argue that the Examiner's "upside down" modification is inappropriate. App. Br. 8-9. However, the Examiner did not propose a modification flipping anything upside down. Appellants' argument is not persuasive because it is not directed to the modification proposed by the Examiner.

Issue (3) - Claims 1-5, 7-12, 14-16, and 18-22 in view of Loibl and Lindberg

The Examiner found that Loibl describes each element of claim 1 except for the channel (FF9, FF8). Ans. 4-5. The Examiner found that Lindberg describes a cooling channel through a heat sink (FF7), and reasoned that use of Lindberg's heat sink with cooling passages as the heat conducting body in Loibl's control device would lead to an increase in heat transfer from, and a reduction in overheating to, Loibl's control device. Ans. 5.

Appellants argue that if Lindberg's heat sink were attached to the bottom of Loibl's base plate 10, then the bottom would not be a plastic plate with an opening, as claimed. App. Br. 10. However, the Examiner did not propose such a combination of Loibl and Lindberg. *See* Ans. 5. Therefore, Appellants argue against a combination not made.

Appellants further argue that the area between [plastic] plate 11 and metal plate 10 does not form a channel. App. Br. 11. However, as noted above, claim 1 does not require a channel *between* the plates. As discussed above with respect to the combination of Chia and Lindberg, the channel described in Lindberg would run *through* the heat sink itself.

Finally, Appellants argue that Lindberg describes running channels through the largest area of a heat sink, and that the combination of Lindberg and Loibl teaches away from the "claimed" channel between the plastic and metal bodies. App. Br. 11. However, as noted above, the claim does not require a channel to run between the bodies.

Issue (4) - Claims 1-5, 7-12, 14-16, and 18-22 in view of Mertol, Lindberg, Chia, Loibl, and Bäuml

The Examiner found that Mertol discloses nearly every element of claim 1, including a heat conduction body 8 partially integrated in a plastic control plate 11. Ans. 5-6, *see* FF10. The Examiner found that Mertol fails to disclose a flush metal and plastic plate surface (FF11), as well as a channel (FF12). Ans. 5-6. However, the Examiner found that Lindberg describes a channel (FF7), and that Chia (FF5), Bäuml (FF13), and Loibl (FF1) describe a heat conducting plate flush with a plastic control plate. Ans. 6. Given these references, the Examiner found that it would have been obvious to add a flush surface structure, as taught in Chia and Loibl, with the controls of Mertol to reduce the size of the controls. Ans. 6. Further, the Examiner found that that it would have been obvious to modify the heat sink in Mertol by adding fluid channels to the heat sink, as taught by Lindberg, in order to prevent overheating and to increase heat transfer. *Id.*

Appellants first argue that if stiffener 11 of Mertol were flush with the surface of substrate 2, then substrate 2 would have to be trimmed, rendering the substrate inoperable. App. Br. 13. However, the Examiner did not rely on the substrate 2 as the plastic body in the rejection; the Examiner relied on the stiffener 11 as the plastic body. Ans. 5-6, 10-11. Therefore, Appellants'

arguments are not directed to the rejection articulated by the Examiner, and thus are not persuasive.

Appellants next argue that a channel between substrate 2 and heat sink 8 of Mertol would place fluid in direct contact with the printed circuit board and render it inoperable. App. Br. 13. However, the Examiner did not state that the channel would run through this area. The Examiner proposes to run a cooling channel through the plastic body and heat sink, as described in Lindberg. *See* Ans. 6, 10. Therefore, Appellants' arguments are not directed to the modification proposed by the Examiner.

Still further, Appellants argue that the Examiner's "upside down" modification is improper. App. Br. 13-14. However, this argument is directed toward a modification not proposed by the Examiner.

Finally, Appellants argue that stiffener 11 in Mertol is not a body having an opening with a bottom wall, and instead has a hole all the way through. App. Br. 14. However, as depicted in fig. 13, Mertol describes a plastic stiffener 11 that has a bottom wall that holds heat sink 8. FF10.

CONCLUSIONS

- (1) Chia, Loibl, and Mertol are analogous prior art to the claimed invention.
- (2) Appellants have not demonstrated that the combination of Chia and Lindberg proposed by the Examiner would either render Chia unsatisfactory for its intended purpose or result in a device not meeting all limitations of claim 1.
- (3) Appellants have not demonstrated either that Lindberg teaches away from the combination of Loibl and Lindberg proposed by the

- Examiner or that the proposed combination would not meet all limitations of claim 1.
- (4) Appellants have not demonstrated either that the Examiner's proposed combination of Mertol, Lindberg, Chia, Loibl, and Bäuml would render the printed circuit board of Mertol inoperable or that Mertol, Lindberg, Chia, Loibl, and Bäuml, even if combined, would not render obvious a plastic body having an opening with a bottom wall with a partially flat area.

DECISION

The Examiner's decision is affirmed as to claims 1-5, 7-12, 14-16, and 18-22.

AFFIRMED

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